

**REMARKS**

Claims 1-29 are pending in this application. By this Amendment, claims 3 and 15 are amended and claims 22-29 are added. Support for new claims 22-29 can be found in the original specification, including the claims and the figures, for example, see page 8, lines 7-11 and Example 1 on pages 10-11. Reconsideration in view of the above amendments and following remarks is respectfully requested.

**1. 35 U.S.C. §102(e)**

The Office Action rejects claims 1-7, 9-10, 14-18 and 21 under 35 U.S.C. §102(e) as being anticipated by *Taft, III et al.* (U.S. Patent Publication No. 2005/0244697, hereinafter referred to as "*Taft*"). The rejection is respectfully traversed.

Claim 1 recites a nanocomposite electrolyte membrane for a fuel cell, which comprises a polymer having cation exchange groups; and silicate nanoparticles dispersed in the polymer, the silicate nanoparticles having a layered structure, and the silicate nanoparticles being intercalated with the polymer, or layers of the silicate nanoparticles being exfoliated.

*Taft* was filed on April 11, 2005 and claims priority to Application No. 10/644,227 filed on August 19, 2003. Application No. 10/644,227 is a continuation-in-part of Application No. 10/219,083 filed on August 13, 2002, now U.S. Patent No. 6,630,265. However, support for the passages cited in the Office Action dated January 17, 2006 are not supported by U.S. Patent No. 6,630,265. Thus, priority of *Taft* for many of the cited passages goes to August 19, 2003 and not August 13, 2002.

The present application was filed in the U.S. on July 11, 2003, which is before the priority date of *Taft* for many of the cited passages. See, for example, the Office Action, page 2 citing paragraph 0041 of *Taft*, and page 3 citing paragraphs 0050 and 0061. Thus, Applicant submits that several portions of the *Taft* reference cited in the Office Action are not prior art.

As noted in the specification, and emphasized in claim 1, silicate nanoparticles are intercalated with polymer by, for example, adsorbing cationic surfactants within silicate nanoparticles in order to swell the silicate nanoparticles and provide easier intercalation. See pages 7-8 of the specification.

*Taft* discloses a composite electrolyte comprising (i) an inorganic cation exchange material; (ii) a silica-based binder; and (iii) a polymer-based binder. However, *Taft* does not disclose or suggest intercalation of silicate nanoparticles with polymers or exfoliation of nanoparticles. Rather, *Taft* discloses mixing membrane components (*i.e.*, silica-based material, polymer and solvent), and forming a membrane by pouring and drying. However, there is no disclosure or suggestion of intercalation or exfoliation. As explained in the specification, silicate nanoparticles intercalation or exfoliation with polymer reduces methanol crossover in a nanocomposite electrolyte membrane and can be accomplished by swelling a nanoparticle using cationic surfactants, wherein the cationic surfactants can be absorbed by silicate nanoparticles to form "swelled nanoparticles." See page 8 of the specification. Thereafter, the swelled nanoparticles can be mixed with a polymer having cation exchange groups, wherein intercalation and/or exfoliation of the nanoparticles occur. See page 8 of the specification.

Further, *Taft* discloses inorganic cation exchange material and a polymer-based binder, separately, whereas the present application comprises a polymer having cation exchange groups. However, Applicant submits that *Taft*'s inorganic cation exchange material is not part of *Taft*'s polymer-based material, and thus does not anticipate a polymer having cation exchange groups, as recited in claim 1.

For at least the reasons set forth above, Applicant respectfully submits that claim 1 is allowable. Claims 2-7, 9-10, 14-18 and 21 depend from claim 1, and are allowable for at least the same reasons. Withdrawal of the rejection is respectfully requested.

**2. 35 U.S.C. §103(a)**

The Office Action rejects claims 8, 19 and 20 under 35 U.S.C. §103(a) as being unpatentable over *Taft* in view of *Grot et al.* (U.S. Patent No. 5,919,583, hereinafter referred to as "*Grot*"). The Office Action also rejects claims 11-13 under 35 U.S.C. §103(a) as being unpatentable over *Taft* in view of *Yen et al.* (U.S. Patent No. 5,795,496, hereinafter referred to as "*Yen*"). The rejections are respectfully traversed.

Each of the rejections rely on *Taft* as their base reference. As discussed above, *Taft* fails to disclose or suggest all of the features of claim 1, for at least the reasons set forth above. *Grot* and *Yen* fail to cure the deficiencies of *Taft*.

For at least the reasons set forth above, Applicant respectfully submits that claims 8, 11-13, 19 and 20 which depend from claim 1, are allowable for at least the same reasons as claim 1 is allowable. Withdrawal of the rejections is respectfully requested.

**3. New Claims**

New claims 22-29 have been added to the application. Applicant respectfully submits that the cited references fail to disclose or suggest the features recited in claims 22-29. Allowance of new claims 22-29, as well as the remaining pending claims, is respectfully requested.

**4. Conclusion**

Applicant invites the Examiner to contact Applicant's representative at the telephone number listed below if any issues remain in this matter, or if a discussion regarding any portion of the application is desired by the Examiner.

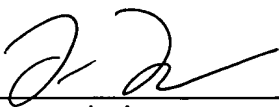
In the event that this paper is not timely filed within the currently set shortened statutory period, Applicant respectfully petitions for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL PC

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By:   
\_\_\_\_\_  
Laura L. Lee  
Registration No. 48,752

P.O. Box 1404  
Alexandria, Virginia 22313-1404  
(703) 836-662